

REMARKS

Claims 44-68 and 70-121 are pending.

Applicants note with appreciation the allowance of claims 71-115 and 121.

Applicants also note with appreciation the indication that claims 46-50, 55-59 and 64-68 would be allowable if rewritten in independent form. Applicants respectfully submit that all pending claims are in condition for allowance as detailed below.

Claims 44, 45, 51-54, 60-63, 69, 70 and 116-120 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 6,198,576 (Matsuyama) in view of U.S. 2005/0018164 (Hansen). This rejection is respectfully traversed.

As an initial matter, Applicants note that claims 119 and 120 depend from allowed claim 71, and therefore should not be included in this rejection. In addition, claim 69 was canceled and thus also should not be identified as rejected.

Matsuyama and Hansen, even when combined, do not disclose or suggest each and every feature of independent claims 44, 53 and 62. In particular, the applied references do not disclose or suggest an arrangement in which the marginal ray convergence angle prior to incidence to a lens is larger than the marginal ray convergence angle within the lens, as recited in independent claim 44 and as similarly recited in independent claims 53 and 62. An example of this feature is shown in Applicants' Figs. 3, 5 and 6 and described, for example, at page 46, lines 14-17 and page 49, lines 11-14 of the present application. In particular, and as can be appreciated from Fig. 6, when the marginal ray convergence angle (L) prior to incidence to a lens (lens 233) is larger than the marginal ray convergence angle (S) within the lens, the point at which the marginal rays converge is moved farther along the optical axis of the lens (to the right in Fig. 6). Another characteristic of this feature, which can be appreciated from Fig. 6, is that the incident marginal ray and the marginal ray within the lens meet each other to form an angle that is less than 180° when viewed from a position that is

displaced away from the optical axis (for example, when the marginal rays of Fig. 6 are viewed looking downward from the top of the page).

Matsuyama, relied upon in the Office Action for allegedly teaching the claimed relationship between marginal ray convergence angles, clearly does not disclose the claimed relationship in which the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle within the lens. Fig. 2 of Matsuyama, relied upon in the Office Action, shows the opposite of what Applicants claim. In particular, as clearly shown in Matsuyama Fig. 2, the final optical element of the Matsuyama projection system receives a light beam having diverging marginal rays, whereas the rays passing through the final optical element do not diverge (that is, the rays within the lens converge more rapidly (at a greater angle) than the incident rays). Thus the marginal ray convergence angle within the lens is larger than the marginal ray convergence angle incident to the lens. When viewed from a location displaced away from the optical axis (for example, when viewed from the left side of Matsuyama Fig. 2), the incident marginal ray and the marginal ray within the final optical element make an angle with each other at the incident surface of the final optical element that is greater than 180° . Thus, Matsuyama does not disclose an arrangement in which the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle within the lens.

Based on the optical system parameters provided in Matsuyama for the first and second embodiments (Table 1 relates to the first embodiment and Table 3 relates to the second embodiment), the first embodiment has a marginal ray convergence angle prior to incidence that is 49.755° ($L = 49.755^\circ$) and a marginal ray convergence angle within the lens that is 54.138° ($S = 54.138^\circ$), and the second embodiment has values $L = 49.546^\circ$ and $S = 54.314^\circ$. Thus, Matsuyama does not disclose or suggest an arrangement in which $L > S$.

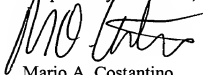
Thus, Matsuyama and Hansen, even when combined, do not disclose or suggest the combinations of features recited in independent claims 44, 53 and 62. Regarding claim 44, the combined references do not disclose or suggest a lens having a liquid immersed surface in which "the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle within said lens." Regarding claim 53, the combined references do not disclose or suggest a boundary lens having a liquid immersed surface in which "for light projected onto the second plane through the boundary lens the marginal ray convergence angle prior to incidence is larger than the marginal ray convergence angle within said boundary lens." Regarding independent claim 62, the combined references do not disclose or suggest a method including "passing light having a first marginal ray convergence angle to a boundary lens", "passing light having a second marginal ray convergence angle through the boundary lens", "passing light from said boundary lens through a layer of immersion liquid to the second plane", wherein "the first marginal ray convergence angle is greater than the second marginal ray convergence angle." Accordingly, independent claims 44, 53 and 62, along with their corresponding dependent claims 45, 51, 52, 54, 60, 61, 63, 70 and 116-118, are patentable over Matsuyama and Hansen.

Withdrawal of the rejection is requested.

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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Attachment:
Petition for Extension of Time

Date: October 24, 2007

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